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ABSTRACT

Three research projects were conducted at the University of Maryland's Reading Clinic (for students in grades one through twelve) to evaluate the efficiency of clinical procedures and to generate research hypotheses and techniques. Using data from randomly selected clinical case studies, the research projects focused on two diagnostic procedures: a modified miscue analysis of oral reading behavior and a phonics skill inventory. The data indicated that time spent coding and interpreting insertion and omission miscues was of little use in clinical practice and might well be suspended. Since 87% of the total miscues were errors of substitution, a closer analysis of substitution miscues seemed warranted. When corrected substitutions made by good and poor readers were compared, it was found that poor readers appeared to rely more on graphophonemics than good readers, and that they used graphic distortions to make corrections. The good readers appeared to rely more consistently on syntax and semantics to make corrections than the poor readers. Analyses of 100 cases in which the Botel Reading Inventory was used showed that the Botel rhyming word subtest scores were adequate indicators of reading retardation at grade levels three through six. Since high rhyming word scores accurately predicted knowledge of initial consonants but not of blends and vowels, clinical procedures were adjusted such that the initial consonant subtest was administered only as a backup measure (when low rhyming subtest scores occurred). (RL)

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Clinical Research: Miscue Analysis and Phonics Inventories

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Running Head: Miscue Analysis

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This paper is a report of three clinical research projects conducted at the Reading Clinic at the University of Maryland. Clinical research is conducted for two purposes; first, to evaluate the efficiency of clinical procedures and second, to generate research hypotheses and techniques.

The first purpose includes the evaluation of diagnostic, remedial, reporting, interview, questionnaire, and supervision procedures with a focus on efficiency and accuracy. The second purpose of clinical research is to develop questions and techniques which can have direct application to classroom situations. The clinic provides an opportunity to conduct pilot projects in carefully controlled environments, in which one to one student-teacher ratios exist involving highly trained educational personnel. From such data research hypotheses and techniques are generated.

At the Reading Clinic a number of screening measures are used with each student to assess reading behavior. Measures of verbal ability, word recognition, silent reading, oral reading, and phonic or study skills are administered. A diagnostic lesson based on an assessed area of strength is the final aspect of a clinic screening. Reading behaviors which indicate individual strengths and needs are identified, interpreted, and the resulting information is shared in an interview with parents.

The research projects reported here focused on two diagnostic procedures; a modified miscue analysis of oral reading behavior and a phonics skill inventory. The three sets of data were obtained primarily from randomly selected clinic case folders, with the exception of data on good readers included in the second study. These cases included only those students referred by parents, screened, and recommended for clinical instruction. Students ranged in grade levels from 1 to 12 and were reading at instructional levels of 1-8 years below school grade. Generalizations made from these studies should be limited to populations similar to those described here.

Study I

The first study developed from a concern as to whether time spent by clinicians when employing a modified miscue analysis with samples of a student's oral reading performance was worthwhile. The miscue analysis in use was a modification of Y. Goodman and C. Burke's Reading Miscue Inventory (1972) and it included semantic and syntactic acceptability of substitutions, insertions, and omissions. Specifically three questions were asked:

1. What were the proportions of substitutions, insertions, and omissions among the oral reading miscues?
2. What were the frequencies and proportions of semantic and syntactic distortions produced by insertions and omissions?
3. What were the frequencies of insertions and omissions by case?

From clinic screening files, 94 cases were randomly selected and instructional levels on the Diagnostic Reading Scales (DRS) (Spache 1972) were identified. Oral reading substitution, insertion and omission miscues made at instructional grade levels of one through eight were examined.

To answer the first question, the total 595 miscues subject to semantic and syntactic analysis were examined. Of the total miscues, substitutions accounted for 87%, insertions for 6% and omissions for 7% (Table 1).

Insert Table 1 about here

To answer the second question, insertion and omission miscues were examined independently. Of the 33 insertions made, 94% did not distort semantics and 82% did not distort syntax. Of the 44 omissions, 93% did not distort semantics and 86% did not distort syntax (Table 2). Insertion and omission miscues were also examined with respect to the total 595 miscues. Insertions causing semantic distortion occurred .3% of the time; insertions causing syntactic distortation 1% of the time. Omissions causing semantic distortion occurred .4% of the time; omissions causing syntactic distortion 1% of the time.

Insert Table 2 about here

To answer the third question, the incidence of insertions and omissions in the total number of cases was examined. Of the

total 94 cases, 65 readers (69%) made no insertions and 25 readers (27%) made only one insertion. Again, 65 readers (69%) made no omissions and 19 readers (20%) made only one omission.

Insertions and omissions which distorted semantics and syntax constituted less than 3% of the miscues analyzed. If these data can be confirmed with other populations, it would indicate that time spent coding and interpreting insertion and omission miscues is of little use in clinical practice and might well be suspended. Thus coding and interpretations can be simplified and attention can be focused on substitutions which yield more information about reading difficulty.

Results of this study suggested several questions for further research. Are these findings substantiated with other populations? Are more insertions and omissions made as readers gain proficiency? What are the qualitative differences in insertions and omissions made by younger and older readers? Continued study of oral reading miscues will undoubtedly yield answers to these and other questions.

Study II

Findings of the first study indicated that a closer analysis of substitution miscues would be helpful. Hence, the second study focused on corrected substitutions made by good and poor readers during oral reading. According to Goodman (1969) correction behavior may be " . . . the most significant factor in analyzing any miscue." (p. 19). Self-correction can indicate a reader's awareness of meaning disruption and a successful attempt to restore meaning to what is being read.

Differences in good and poor readers' corrections may thus indicate differences in comprehension strengths. Some research has indicated that good readers tend to correct higher percentages of miscues than do poor readers (Beebe 1980; Clay 1969; Weber 1970). However, little research has been done in analyzing the quality of corrected miscues. This study examined both quantitative and qualitative differences of corrections and how these differences reflected use of graphophonemics, syntax and semantics. Specifically three questions were asked:

1. What were the number of substitutions produced?
2. What were the percentages of corrected and uncorrected substitutions?
3. What were the types of corrected substitutions?

From clinic screening files, 60 cases were randomly selected. Instructional levels (1 to 5 years below school grade levels) and frustration levels on the DRS were identified for this group of poor readers. Samples of oral reading were taken from the first 100 words on DRS passages of third to eighth grade levels. A group of 60 good readers (instructional levels of 1 to 3 years above school grade levels) was randomly selected from four public schools. School grade levels for both groups ranged from 4 to 8. Counts were made of corrected and uncorrected substitutions. Corrections were classified according to type as graphophonemically, syntactically, and semantically acceptable or unacceptable. To determine interrater agreement two raters analyzed 287 miscues independently. Agreement on these classifications existed 97% of the time.

Thus it was assumed that remaining classifications made by only one person were accurate.

To answer the first question, counts were made of substitutions produced at both levels. (For 38 good readers who scored instructionally at the last level of the DRS, no frustration level data was obtained). At instructional level, good readers made 172 substitutions and poor readers made 254 substitutions. At frustration level, good readers made 101 substitutions and poor readers made 431 substitutions. Corrected and uncorrected substitutions for each group follow in Table 3. (Numbers of students vary because some students either made no substitution miscuses in the first 100 words of a passage or made no corrections).

Insert Table 3 about here

Of these numbers, percentages of corrected and uncorrected substitutions were identified to answer the second question. Good readers consistently corrected higher percentages (34% and 22%) of substitutions at both instructional frustration levels than did poor readers (20% and 13%).

To answer the third question, corrected substitutions were identified by type, percentage and number (Table 4).

Insert Table 4 about here

Examination of graphophonemics at both levels indicated that: Poor readers corrected high percentages (72%, 52%) of

substitutions which were dissimilar or contained only one similarity to the text word. Good readers corrected low percentages (31%, 40%) of substitutions which were graphophonemically unacceptable. Poor readers appeared to rely more on grephophonemics than good readers and used graphic distortions to make corrections.

Examination of syntax and semantics indicated that: Both groups corrected higher percentages of miscues which caused semantic distortions (73%, 85%, 81%, 67%) than miscues which caused syntactic distortions (56%, 70%, 53%, 43%). Both groups appeared to be aware of meaning and used semantics more often than syntax to make corrections.

Looking at syntax and semantics as material increased in difficulty indicated that: Good readers at frustration level corrected higher percentages of miscues which distorted syntax and semantics (70%, 80%) than they did at instructional level (56%, 73%). Poor readers at frustration level corrected lower percentages of miscues which distorted syntax and semantics (43%, 67%) than they did at instructional level (53%, 81%). As materials increased in difficulty then, good readers appeared to rely more consistently on syntax and semantics to make corrections than poor readers did.

Overall, generally small differences between groups at instructional level was an unexpected finding. It had been hypothesized that good and poor readers would show marked differences in the use of graphophonemics, syntax, and semantics to make corrections. Further study of the qualitative aspect of

correction behavior needs to be made to either confirm or reject these findings.

Results of this study also suggested other questions for further research. How is correction behavior related to content of material? How does correction behavior change in different portions of a passage? Do syntactically acceptable miscues always occur more often than semantically acceptable miscues? Continued study of corrections in oral reading is needed to answer these questions.

Study III

The third study developed from an interest in the usefulness of administering all five phonics skill subtests in the Botel Reading Inventory (1970 Edition). When clinicians examined students' reading behaviors, considerable amounts of time were spent determining skills in word analysis. We wondered whether time spent administering all of the Botel subtests was worthwhile with respect to information gained.

Informal observations of Botel scores of students entering summer clinic for tutoring indicated some commonality between skill in the rhyming word subtest and degree of reading retardation as measured on the Diagnostic Reading Scales. Students whose oral reading accuracy level was close to this expected level seemed to score high on the rhyming subtest and vice versa. Also, high rhyming word scores seemed to accompany high scores on some of the other subtests.

Botel subtest scores and oral reading accuracy levels were examined. Specifically two questions were asked:

1. Do rhyming word scores indicate degree of reading retardation?
2. Do rhyming word scores indicate other subtest scores?

From 2000 clinic screening files, 100 cases (15 females and 85 males) were randomly chosen. Of the sample, 86 cases were from grades 2-6 and 14 cases were from grades 7-12 and all had been recommended for clinical instruction.

To answer the first question, rhyming word subtest scores (total possible score = 8) and oral reading levels on the Diagnostic Reading Scales were examined. Data which were most striking involved 65 students in grades 3-6.

- Rhyming scores of 0-4 and oral reading levels of 2 or more years below grade level occurred 79% of the time.
- Rhyming scores of 7 and 8 and oral reading levels of 2 or more years below grade level occurred 15% of the time.

The answer to the first question was yes; rhyming word scores did indicate degree of reading retardation for readers in grades 3-6. (Data involving students in grades 2 and 7-12 were inconclusive and are not reported.)

To answer the second question, rhyming word scores of 6 or better were analyzed with respect to scores on other subtests. Total possible scores were; initial consonants = 18, blends = 18, vowels = 10, and rhyming word = 8. (Diagraphs were not included because of the small number of items on this subtest, total possible score = 4.) For all cases in which rhyming word subtest scores were 6 or better:

- 100% of the students scored 89% or higher on initial consonants. (84% of the students scored 100% on initial consonants.)
- 65% of the students scored 80% or higher on blends.
- 43% of the students scored 80% or higher on vowels.

Answers to the second question were; yes, rhyming word scores did effectively (scores of 80% or higher) indicate initial consonant scores and no, rhyming word scores did not effectively indicate blend and vowel scores.

Rhyming word scores of students in grades 3-6 were found to indicate degree of reading retardation. Students with low rhyming word scores (0-4) were found to have lower oral reading levels (2 or more years below grade level) than students who had high rhyming word scores.

In the 100 cases examined, high rhyming word scores most accurately indicated knowledge of initial consonants. High rhyming scores were found to indicate some skill in blends and vowels but not enough to make predictions (using 80% as a criterion). Skill in writing rhyming words coincided with skill in identifying initial consonants consistently enough to suggest skipping the initial consonant subtest altogether when a student possesses skill in rhyming. As a result it was recommended that procedures at the reading clinic be adjusted and the rhyming word subtest be administered first and the initial consonant subtest be given only in cases where rhyming word scores are 6 or less.

Results of this study suggested some questions for further research. Can these findings be confirmed with other clinic

populations? Do rhyming word scores indicate degree of reading proficiency? How can phonics assessments be made more efficient? Further study will undoubtedly bring answers to these and other questions involving skill inventories.

Conclusion

Findings of the three clinical research projects described here have implications for both research and practice. Specifically, this clinical study has resulted in a number of questions and areas for further research including: evaluation of comprehension by retelling, questioning, cloze, and maze techniques; examination of school responses to clinical recommendations; comparisons of various assessments of reading potential; and comparisons of parent follow-up to clinical recommendations. The research reported here also has resulted in recommendations for changes and modifications in the types of screening measures and procedures used at the University of Maryland Clinic. Improved efficiency of clinical procedures and generation of research hypothesis and techniques continue to be a major goal in our examination and evaluation of clinical generated data.

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TABLE 1

Number of Oral Reading Miscues

Insertions	33
Omissions	44
Substitutions	518
Total	595

TABLE 2

Number of Semantically and Syntactically Acceptable and Unacceptable Insertions and Omissions

	Semantically		Syntactically	
	Acceptable	Unacceptable	Acceptable	Unacceptable
Insertions	31	2	27	6
Omissions	41	3	38	6
Total	72	5	65	12

TABLE 3

Number of Students (N) and Corrected and Uncorrected Substitutions

	Good Readers' Substitutions			Poor Readers' Substitutions		
	Cor. N	Uncor. N	Total	Cor. N	Uncor. N	Total
Instructional Level	59 (40)	113 (49)	172	57 (29)	197 (56)	254
Frustration Level	20 (12)	81 (22)	101	54 (25)	377 (60)	431

TABLE 4

Percentages and Numbers of Corrected Substitutions by Type

	Good Readers				Poor Readers			
	Instruct.		Frust.		Instruct.		Frust.	
	%	N	%	N	%	N	%	N
Graphophonemics								
Acceptable	69	(41)	60	(12)	28	(16)	48	(26)
Unacceptable	31	(18)	40	(8)	72	(41)	52	(28)
Syntax								
Acceptable	44	(26)	30	(6)	47	(27)	57	(31)
Unacceptable	56	(33)	70	(14)	53	(30)	43	(23)
Semantics								
Acceptable	27	(16)	15	(3)	19	(11)	33	(18)
Unacceptable	73	(43)	85	(17)	81	(46)	67	(36)